

Guidelines toward the design of reinforced concrete beams with external plates

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Abstract: This paper addresses the issue of rational design of RC beams to be fortified with external reinforcement in the form of plates. Drawing on results of numerical and experimental studies, the design approach is crystallized by interpreting major modes of failure for plated RC beams, including 1) flexural, 2) interface separation, and 3) concrete cover ripoff. New expressions for peak interface shear and peeling stresses, as well as a predictor equation for shear resistance of plated RC beams, are presented for use as design aids.